

## SPEEDMASK® 750-SC High-Temperature See-Cure Maskant for Thermal Spray Coatings

**APPLICATIONS**

- High-Temp Plasma Spray
- Aggressive Grit Blasting
- HVOF
- Wire Arc Spray
- Thermal Spray Coatings

**FEATURES & BENEFITS**

- Purple-to-Pink upon Sufficient Exposure to UV/Visible Light
- High Adhesion
- Hard and Durable, Cures Tack Free
- Resilient to Blast Media
- Sprayable
- Peelable or Incineration Removal Method

**RECOMMENDED SURFACES**

- Nickel Alloys
- Titanium Alloys
- Cobalt Chrome

**SPEEDMASK® 750-SC** UV/Visible Ultra Light-Weld masking resin is formulated to provide excellent surface protection during higher temperature thermal spray coating, plasma spray, and HVOF processes as well as aggressive grit blasting. The purple transitions to pink upon exposure to sufficient light energy indicating full cure has been achieved. SpeedMask resins contain no nonreactive solvents and cure upon exposure to light. Their ability to cure in seconds enables faster processing, greater output, and lower processing costs. This 100% organic resin cures quickly and is easily removed by incineration in an air furnace at a minimum temperature of 650°C [1200°F]. 750-SC can also be removed from the coated substrate after short exposures to warm water (60°C +) or warm air. This exposure will soften the maskant and allow for easier removal. When cured with Dymax light-curing spot lamps, focused-beam lamps, or flood lamps, they deliver optimum speed and performance for many masking applications. Dymax lamps offer the optimum balance of UV and visible light for the fastest, deepest cures. This product is in full compliance with the RoHS Directives 2002/95/EC and 2003/11/EC.

**UNCURED PROPERTIES \***

| Property               | Value                   | Test Method |
|------------------------|-------------------------|-------------|
| Solvent Content        | No Nonreactive Solvents | N/A         |
| Chemical Class         | Acrylated Urethane      | N/A         |
| Appearance             | Translucent Purple Gel  | N/A         |
| Soluble in             | Organic Solvents        | N/A         |
| Density, g/ml          | 1.06                    | ASTM D1875  |
| Viscosity, cP (20 rpm) | 30,000 (nominal)        | DSTM 502    |

**OTHER CURED PROPERTIES \***

| Property                          | Value | Test Method |
|-----------------------------------|-------|-------------|
| Boiling Water Absorption, % (2 h) | 1.8   | ASTM D570   |
| Water Absorption, % (25°C, 24 h)  | 0.6   | ASTM D570   |
| Linear Shrinkage, %               | 1.5   | ASTM D2566  |

**CURED MECHANICAL PROPERTIES \***

| Property                         | Value     | Test Method |
|----------------------------------|-----------|-------------|
| Durometer Hardness               | A85       | ASTM D2240  |
| Tensile at Break, MPa [psi]      | 4.1 [600] | ASTM D638   |
| Elongation at Break, %           | 140       | ASTM D638   |
| Modulus of Elasticity, Mpa [psi] | 4.4 [640] | ASTM D638   |

\* Not Specifications

N/A Not Applicable



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Technical Data Collection Prior to 2013

06/11/2015

**CURING GUIDELINES**

The purple color of this Dymax **SPEEDMASK®** See-Cure resin transitions to pink when it is fully cured. Full cure is achieved when additional light exposure does not improve the cured properties. The chart below provides information on how long it takes to complete the transition from purple to pink, using different light sources. Cure rate is dependent upon many variables, including lamp intensity, distance from the light source, and required depth of cure. The times and belt speed for the transition listed below are based on lab results and are intended for reference only. Testing was performed using a 0.38 mm [0.015 in] coating thickness. Time/belt speed was determined by a complete, tack-free cure and transition from purple to pink.

| Dymax Curing System (Intensity)                                       | Time or Belt Speed to Complete Transition from purple to pink |
|---|---|
| 5000-EC (250 mW/cm <sup>2</sup> ) <sup>A</sup>                        | 10 s  |
| Porta-Ray® 400 (400 mW/cm <sup>2</sup> ) <sup>A</sup>                 | 3 s   |
| UVCS Conveyor with Fusion F300S (2.5 W/cm <sup>2</sup> ) <sup>B</sup> | 3.0 m/min<br>[10 ft/min]                                      |

**A** Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.

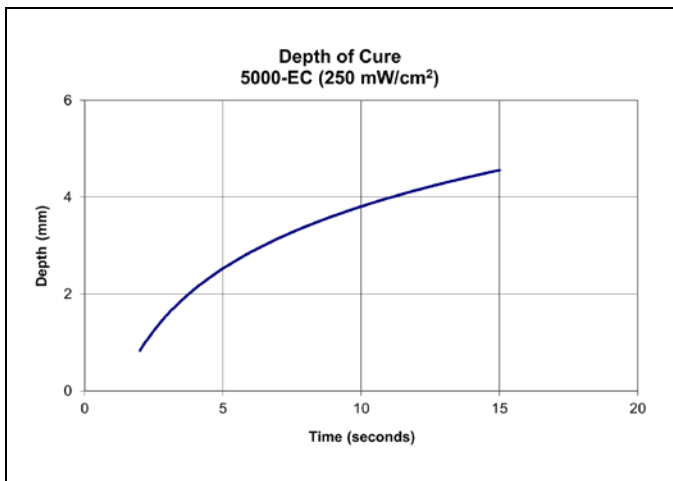
**B** At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 150 Radiometer.

Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties such as tackiness, adhesion, hardness, etc. Full cure is defined as the point at which more light exposure no longer improves cured properties. Higher intensities or longer cure times may degrade Dymax light-curable masks.

Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure. Although Dymax Applications Engineering can provide technical support and assist with process development, each customer must ultimately determine and qualify the appropriate curing parameters required for their unique application.

**DEPTH OF CURE**

The graph below shows the increase in depth of cure as a function of exposure time. A 9.5 mm [0.37 in] diameter specimen was cured in a polypropylene mold and cooled to room temperature. It was then released from the mold and the cure depth was measured.



**OPTIMIZING PERFORMANCE AND HANDLING**

1. This product cures with exposure to UV and visible light. Exposure to ambient and artificial light should be kept to a minimum before curing. Dispensing components, including needles and fluid lines, should be 100% light blocking, not just UV blocking.
2. All surfaces to be masked should be clean and free from grease, mold release, or other contaminants prior to dispensing the resin.
3. Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require higher intensity UV (>100 mW/cm<sup>2</sup>) to produce a tack-free cure. Flooding the bond area with an inert gas, such as nitrogen, can also reduce the effects of oxygen inhibition.
4. Cured part should be allowed to cool before testing.
5. Light curing generally produces some heat. If necessary, cooling fans can be placed in the curing area to reduce the heating effect on components.
6. At the point of curing, an air exhaust system is recommended to dissipate any heat and vapors formed during the curing process.

**DISPENSING THE RESIN**

This material may be dispensed with a variety of manual and automatic applicators or other equipment as required. Questions relating to dispensing and curing systems for specific applications should be referred to Dymax Application Engineering.

**STORAGE AND SHELF LIFE**

Store the material in a cool, dark place when not in use. Do not expose to light. This product may polymerize upon prolonged exposure to ambient and artificial light. Keep covered when not in use. This material has a six-month shelf life from date of shipment, unless otherwise specified, when stored between 10°C [50°F] and 32°C [90°F] in the original, unopened container.

**CLEANUP**

Uncured material may be removed from dispensing components and parts with organic solvents. Cured material will be impervious to many solvents and difficult to remove. Cleanup of cured material may require mechanical methods of removal.

**GENERAL INFORMATION**

This product is intended for industrial use only. Keep out of the reach of children. Avoid breathing vapors. Avoid contact with skin, eyes, and clothing. Wear impervious gloves. Repeated or continuous skin contact with uncured material may cause irritation. Remove material from skin with soap and water. Never use organic solvents to remove material from skin and eyes. For more information on the safe handling of this material, please refer to the Material Safety Data Sheet before use.